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Abstract

PROBLEM TO BE SOLVED: To uniformize thickness and to stabilize reactivity by growing a PbS thin film by the atomic layer vapor deposition method or the chemical vapor deposition method, using an organic metal compound.

SOLUTION: Regarding the method for manufacturing a PBX (X=S or Se) thin film, an organic metal compound containing Pb having a covalent binding with a working group is used as a Pb-precursor, and this precursor is reacted with H₂X (X=S or Se), thereby forming a PBX thin film. Also, regarding the method for manufacturing a luminescent material formed out of a base material for accelerating electrons and a light emitting zone containing luminescent center ions, a base material growth and a light emitting zone growth are separated from each other, and many are alternately made to grow repeatedly. In this case, the growth is caused by adjusting ions to be present as the status of Pb₂₊dimer as the light emitting center ions. In addition, a luminescent material having very high color purity and brightness is manufactured by adding the Pb₂₊ions in a selective and specific state, regardless of the wide concentration range of Pb₂₊.